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# Research Note

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100-1 FOREST AREA AND TIMBER VOLUME FOR LAWRENCE COUNTY, SOUTH DAKOTA, 1971

25-1  
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## ABSTRACT

Presents classification of total land area by Forest Survey standards as well as timber volume data according to species, forest type, stand-size class, and ownership.

OXFORD: 524.61:524.3. KEYWORDS: forest surveys (regional)  
(stand volume) forest area classification

Data presented in this Note are based on a comprehensive timber survey made in western South Dakota during 1971 by the South Dakota State Forestry Department in cooperation with the USDA Forest Service Rocky Mountain Region and the Intermountain Forest and Range Experiment Station.

## LAND AREA

Approximately 70 percent of the total land area (512,000 acres) in Lawrence County, South Dakota (fig. 1) is forested. This area was classified according to Forest Survey land classes as shown in the following tabulation:<sup>2</sup>

Land class	M acres
Commercial forest land regulated	338.1
Commercial forest land unregulated	.7
Unproductive forest land	17.9
Productive reserved forest land	0
Total forest land	356.7
Nonforest land	155.3
Total land area	512.0

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<sup>2</sup>See "Terminology" on page 8 for definitions of Forest Survey terms.



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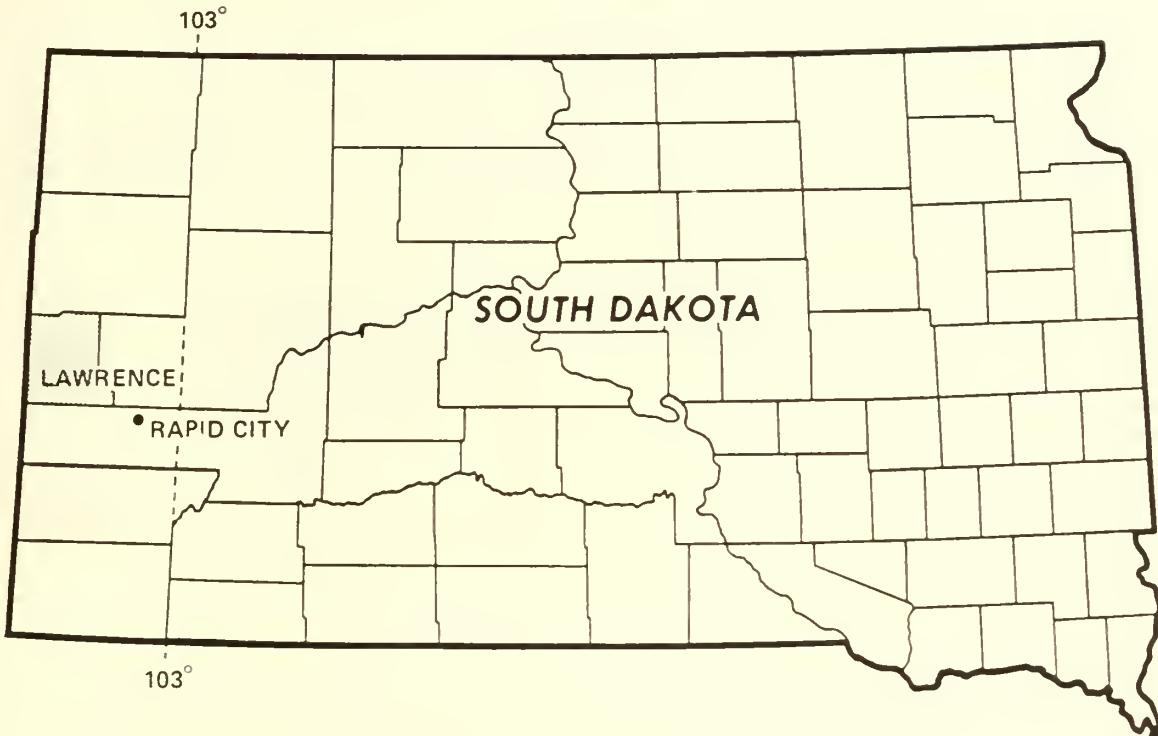


Figure 1.--Location of Lawrence County, South Dakota.

SPECIES

On the 338,000 acres of commercial forest land, trees containing almost 356 million cubic feet (1.3 billion board feet) were growing, of which 87 percent were ponderosa pine (*Pinus ponderosa*), as shown in the following tabulation:

Species	Growing stock (M ft <sup>3</sup> )	Sawtimber (Mfbm)
<b>Softwoods:</b>		
Ponderosa pine	310,666	1,129,571
White spruce ( <i>Picea glauca</i> )	40,600	168,643
Total	351,266	1,298,214
<b>Hardwoods:</b>		
Aspen ( <i>Populus tremuloides</i> )	2,504	631
Other	1,888	1,747
Total	4,392	2,378
Total	355,658	1,300,592



### STAND SIZE

Sawtimber stands cover about 245,000 acres (table 1), which represents 72 percent of the commercial forest land and accounts for 85 percent (303 million cubic feet) of the growing stock volume, as reflected in the following tabulation:

Stand-size class	Growing stock (M ft <sup>3</sup> )	Sawtimber (Mfbdm)
Sawtimber stands	303,226	1,213,885
Poletimber stands	51,329	82,376
Seedling/sapling stands	599	2,177
Nonstocked area	504	2,154
 Total	355,658	1,300,592

Table 1.--Area of commercial forest land by stand-size class and forest type for Lawrence County, South Dakota, 1971

Stand-size class	Softwoods		Hardwoods		Total
	Ponderosa	White	Aspen	Other	
	pine	spruce			
- - - - - M acres - - - - -					
Sawtimber	208.1	17.1	1.2	18.2	244.6
Poletimber	73.5	1.5	--	3.0	78.0
Seedling/sapling stands	8.7	<sup>1</sup> NS	--	--	8.7
Nonstocked areas	6.8	--	--	--	6.8
 Total	297.1	18.6	1.2	21.2	338.1

<sup>1</sup>Not significant; less than 0.05 M acres.



OWNERSHIP

More than 80 percent of the commercial forest land in Lawrence County is publicly owned. The typical acre is a ponderosa pine sawtimber stand on the Black Hills National Forest (tables 2 and 3). Obviously, the majority of the growing stock and sawtimber tree volume is also located on this National Forest, as shown in the following tabulation:

<i>Ownership class</i>	<i>Growing stock</i> ( <i>M ft<sup>3</sup></i> )	<i>Sawtimber</i> ( <i>Mfbm</i> )
<b>Public:</b>		
National Forest	244,554	907,850
Other federal	7,662	25,848
<b>Total federal</b>	<b>252,216</b>	<b>933,698</b>
State, county, and municipal	6,525	23,284
<b>Total</b>	<b>258,741</b>	<b>956,982</b>
<b>Private:</b>		
Farm	53,451	192,797
Miscellaneous private <sup>3</sup>	43,466	150,813
<b>Total</b>	<b>96,917</b>	<b>343,610</b>
<b>Total</b>	<b>355,658</b>	<b>1,300,592</b>

<sup>3</sup>Includes land owned by forest industries.



Table 2.--Area of commercial forest land by ownership class and forest type for Lawrence County, South Dakota, 1971

Ownership class	Softwoods		Hardwoods		Total	
	: Ponderosa : White		: Aspen : Other			
	pine	spruce				
M acres						
<b>Public:</b>						
National Forest	249.3	13.3	--	--	262.6	
Other federal	3.6	.4	1 <sup>NS</sup>	1.1	5.1	
<b>Total</b>	<b>252.9</b>	<b>13.7</b>	<b>NS</b>	<b>1.1</b>	<b>267.7</b>	
<b>State, county, and municipal</b>	<b>2.7</b>	<b>.3</b>	<b>NS</b>	<b>1.4</b>	<b>4.4</b>	
<b>Total</b>	<b>255.6</b>	<b>14.0</b>	<b>NS</b>	<b>2.5</b>	<b>272.1</b>	
<b>Private:</b>						
Farm	22.2	2.4	.7	11.4	36.7	
Miscellaneous private <sup>2</sup>	19.3	2.2	.5	7.3	29.3	
<b>Total</b>	<b>41.5</b>	<b>4.6</b>	<b>1.2</b>	<b>18.7</b>	<b>66.0</b>	
<b>Total</b>	<b>297.1</b>	<b>18.6</b>	<b>1.2</b>	<b>21.2</b>	<b>338.1</b>	

<sup>1</sup>Not significant; less than 0.05 M acres.

<sup>2</sup>Includes land owned by forest industries.

Table 3.--Area of commercial forest land by ownership class and stand-size class for Lawrence County, South Dakota, 1971

Ownership class	Stand-size class				Total	
	: Sawtimber : Poletimber		: Seedling/ : Nonstocked			
	sapling					
M acres						
<b>Public:</b>						
National Forest	182.7	64.4	8.7	6.8	262.6	
Other federal	4.1	1.0	--	--	5.1	
<b>Total</b>	<b>186.8</b>	<b>65.4</b>	<b>8.7</b>	<b>6.8</b>	<b>267.7</b>	
<b>State, county, and municipal</b>	<b>3.7</b>	<b>.7</b>	<b>--</b>	<b>--</b>	<b>4.4</b>	
<b>Total</b>	<b>190.5</b>	<b>66.1</b>	<b>8.7</b>	<b>6.8</b>	<b>272.1</b>	
<b>Private:</b>						
Farm	30.4	6.3	--	--	36.7	
Miscellaneous private <sup>1</sup>	23.7	5.6	--	--	29.3	
<b>Total</b>	<b>54.1</b>	<b>11.9</b>	<b>--</b>	<b>--</b>	<b>66.0</b>	
<b>Total</b>	<b>244.6</b>	<b>78.0</b>	<b>8.7</b>	<b>6.8</b>	<b>338.1</b>	

<sup>1</sup>Includes land owned by forest industries.



### NONCOMMERCIAL FOREST LAND

Farmers own 46 percent of the noncommercial forest land. Oak grows on most of the 55 percent of the noncommercial forest land. Ponderosa pine stands that are not capable of producing crops of industrial wood because of adverse site conditions (table 4) are found on 40 percent of the noncommercial forest land. The remaining 5 percent is in other softwoods.

Table 4.--Area of noncommercial forest land by ownership class and forest type for Lawrence County, South Dakota, 1971

Ownership class	Softwoods			Hardwoods		Total
	Ponderosa pine	White spruce	Other	Aspen	Other	
	- M acres -					
<b>Public:</b>						
National Forest	4.1	--	<sup>1</sup> NS	--	<sup>1</sup> NS	4.1
Other federal	.1	--	--	--	.3	.4
<b>Total</b>	<b>4.2</b>	<b>--</b>	<b>NS</b>	<b>--</b>	<b>.3</b>	<b>4.5</b>
<b>State, county, and municipal</b>						
	.3	--	NS	--	.6	.9
<b>Total</b>	<b>4.5</b>	<b>--</b>	<b>NS</b>	<b>--</b>	<b>.9</b>	<b>5.4</b>
<b>Private:</b>						
Farm	1.8	--	.6	--	5.9	8.3
Miscellaneous private <sup>2</sup>	.8	--	.4	--	3.0	4.2
<b>Total</b>	<b>2.6</b>	<b>--</b>	<b>1.0</b>	<b>--</b>	<b>8.9</b>	<b>12.5</b>
<b>Total</b>	<b>7.1</b>	<b>--</b>	<b>1.0</b>	<b>--</b>	<b>9.8</b>	<b>17.9</b>

<sup>1</sup>Not significant; less than 0.05 M acres.

<sup>2</sup>Includes land owned by forest industries.



#### DATA RELIABILITY

Total land area for Lawrence County was determined by a 100 percent map census and, therefore, has no sampling error.

Sampling error estimates were not available for the National Forest data presented, so the national accuracy standards prescribed in the Forest Service Handbook (4813.1, 11.1--1) were assumed: 3 percent per million acres on commercial forest land area, 10 percent per million acres on noncommercial forest land area, and 10 percent per billion cubic feet for volume. The Black Hills National Forest is not entirely included within Lawrence County; consequently, the sampling errors associated with the National Forest estimates may be either greater or less than the national accuracy standards.

On non-National Forest lands, forest land area and timber volume were estimated from a double sample using aerial photos for the area estimates and ground plots for the volume estimates. Sampling error estimates are 2.3 percent per million acres for commercial forest land area; 2.3 percent per million acres for noncommercial forest land area; 3.6 percent per billion cubic feet for total cubic-foot volume; and 8.0 percent per billion board feet for total board-foot volume.



## TERMINOLOGY

Forest type.--Forested land classified according to plurality species of living trees.

### FOREST SURVEY LAND CLASSES:

Commercial forest land.--Forest land that is producing or is capable of producing crops of industrial wood (20 cubic feet per acre per year).

Commercial forest land regulated.--Commercial forest land that is included in the allowable cut timber base.

Commercial forest land unregulated.--Commercial forest land that is not included in the allowable cut timber base because the timber occurs in isolated patches and stringers, unstable soils, and so forth.

Unproductive forest land.--Forest land that is not capable of producing crops of industrial wood (20 cubic feet per acre per year) because of adverse site conditions.

Productive reserved forest land.--Commercial forest land that has been withdrawn from timber production through statute or administrative regulation.

Nonforest land.--Land that does not support a forest cover.

### STAND-SIZE CLASSES:

Sawtimber stands.--Stands at least 10 percent stocked with growing stock trees having a minimum net volume of 1,500 board feet (International  $\frac{1}{4}$ -inch rule) in sawtimber trees (9.0 inches diameter at breast height (dbh) and larger for softwoods and 11.0 inches dbh and larger for hardwoods).

Poletimber stands.--Stands failing to meet the sawtimber criteria, but at least 10 percent stocked with poletimber and larger trees (5.0 inches dbh and larger and at least the minimum stocking in poletimber size trees).

Seedling/sapling stands.--Stands failing to meet both the sawtimber and poletimber criteria, but having at least 10 percent stocking in trees of commercial species and with at least half the stocking in seedling and sapling size trees (less than 5.0 inches dbh).

Nonstocked areas.--A forest land area not qualifying for any of the above stand-size classes; i.e., usually an area of less than 10 percent stocking.

### TREE SIZE CLASSES:

Growing stock trees.--All noncull trees 5.0 inches dbh and larger.

Sawtimber trees.--Softwood trees 9.0 inches dbh and larger and hardwood trees 11.0 inches dbh and larger.

### VOLUMES:

Growing stock volume.--Net cubic-foot volume of all live merchantable trees 5.0 inches dbh and larger from a 1-foot stump to a minimum 4.0-inch top diameter outside bark.

Sawtimber volume.--Net International  $\frac{1}{4}$ -inch rule board-foot volume of live merchantable sawtimber trees.

